

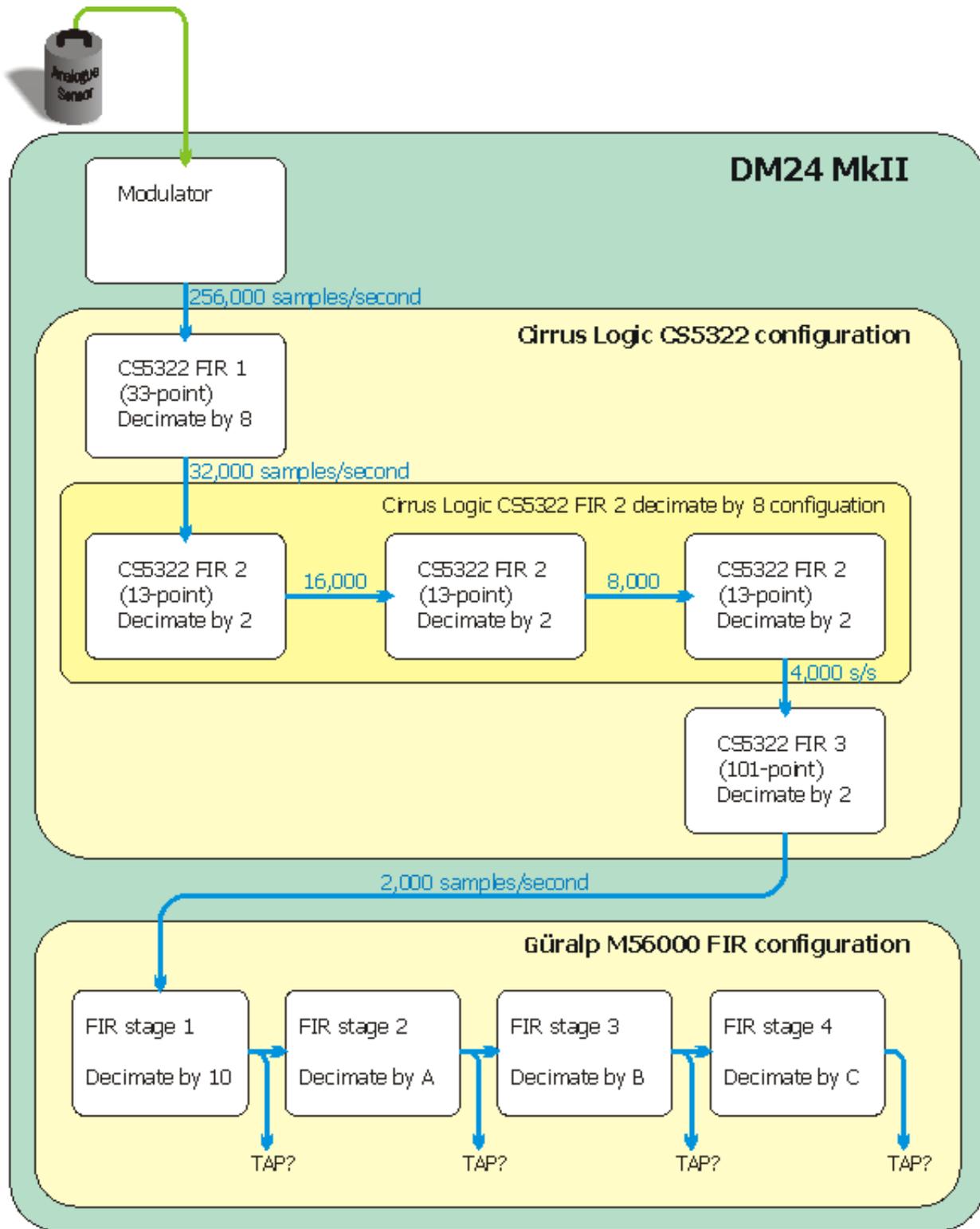


# FIR filter configuration of the CMG-DM24 mk2

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This information applies to all CMG-DM24 units manufactured before 2004, and any Mk2 units manufactured after that date.

The DM24 Mk3 has a different filter configuration.



Data from the modulator is decimated in stages down to 2000 Hz. This is dealt with by a single Crystal CS5322 unit.

- Coefficients for initial decimation by 8
- Coefficients for 13-point decimation by 2

- Coefficients for 101-point decimation by 2

After this, four further FIR filters are used to decimate the data. The DM24 allows the user to select which filter is used at each stage, with the exception of the first tap which is pre-set to a factor of 10.

Five decimation factors are available:

- Coefficients for decimation by 2
- Coefficients for decimation by 4
- Coefficients for decimation by 5
- Coefficients for decimation by 8
- Coefficients for decimation by 10

Other information, such as bit weights (in  $\mu\text{V}/\text{count}$ ), normalisation factor, and poles and zeros, can be found on the digitizer's calibration sheet.

Recent DM24 firmware sets the tap table lookup value in the GCF header. This allows the sequence of filters to be determined from the GCF data itself.

- DM24mk2 decimation information
- DM24mk2 tap table

SWA-D24-2D00

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DM24mk2 Decimation Information

ADC base rate: 256000Hz

- \* [SWA-D24-2D01] coefficients for 33-point decimation by 8
- \* [SWA-D24-2D02] coefficients for 13-point decimation by 2 [x3]
- \* [SWA-D24-2D03] coefficients for 101-point decimation by 2

Tap input rate: 2000Hz

- \* [SWA-D24-2D04] coefficients for decimation by 2
- \* [SWA-D24-2D05] coefficients for decimation by 4
- \* [SWA-D24-2D06] coefficients for decimation by 5
- \* [SWA-D24-2D07] coefficients for decimation by 8
- \* [SWA-D24-2D08] coefficients for decimation by 10

To determine the sequence of decimation filters used in GCF data, take the TTL (tap table lookup) value from the GCF header, and the sample rate of the data, and refer to [SWA-D24-2D09]. The leftmost column is the TTL value. Then decimation factor and resulting sample rate are given for each tap.

TTL,Decimate0, Tap0,Decimate1, Tap1,Decimate2, Tap2,Decimate3, Tap3

- 17,10,200,20,10,5,2,2,1
- 18,10,200,20,10,2,5,5,1
- 19,10,200,10,20,10,2,2,1
- 20,10,200,10,20,5,4,4,1
- 21,10,200,10,20,5,4,2,2
- 22,10,200,10,20,4,5,5,1
- 23,10,200,10,20,2,10,10,1
- 24,10,200,10,20,2,10,5,2
- 25,10,200,10,20,2,10,2,5
- 26,10,200,8,25,5,5,5,1
- 27,10,200,5,40,20,2,2,1
- 28,10,200,5,40,10,4,4,1
- 29,10,200,5,40,10,4,2,2
- 30,10,200,5,40,8,5,5,1
- 31,10,200,5,40,5,8,8,1
- 32,10,200,5,40,5,8,4,2
- 33,10,200,5,40,5,8,2,4
- 34,10,200,5,40,4,10,10,1
- 35,10,200,5,40,4,10,5,2
- 36,10,200,5,40,4,10,2,5
- 37,10,200,5,40,2,20,20,1
- 38,10,200,5,40,2,20,10,2
- 39,10,200,5,40,2,20,5,4
- 40,10,200,5,40,2,20,4,5
- 41,10,200,5,40,2,20,2,10
- 42,10,200,4,50,10,5,5,1
- 43,10,200,4,50,5,10,10,1
- 44,10,200,4,50,5,10,5,2
- 45,10,200,4,50,5,10,2,5
- 46,10,200,4,50,2,25,5,5
- 47,10,200,2,100,20,5,5,1
- 48,10,200,2,100,10,10,10,1
- 49,10,200,2,100,10,10,5,2
- 50,10,200,2,100,10,10,2,5
- 51,10,200,2,100,5,20,20,1
- 52,10,200,2,100,5,20,10,2
- 53,10,200,2,100,5,20,5,4
- 54,10,200,2,100,5,20,4,5
- 55,10,200,2,100,5,20,2,10
- 56,10,200,2,100,4,25,5,5
- 57,10,200,2,100,2,50,10,5
- 58,10,200,2,100,2,50,5,10
- 59,10,200,2,100,2,50,2,25